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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/582,149	06/08/2006	Friedhelm Schmitz	2003P08284WOUS	8840

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SIEMENS CORPORATION
INTELLECTUAL PROPERTY DEPARTMENT
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EXAMINER	
MCNEIL, JENNIFER C	

ART UNIT	PAPER NUMBER
1794	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/582,149	SCHMITZ ET AL.	
	Examiner	Art Unit	
	JENNIFER MCNEIL	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 September 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *19-38* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *19-38* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Double Patenting

Claim 29 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 28. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 19, 20, 22, and 34 are rejected under 35 U.S.C. 102(a) as being anticipated by Won et al (WO 2004/018724-published 03/04/04). Won teaches a hardfacing alloy comprising 14-30 parts by wt Cr, less than 1.5 parts by wt Si, and the remainder Fe. Applicant's recitation of "less than 1.0% Al is considered to include zero in the range of Al. Applicant's recitation of "up to 0.7%" rare earth elements is considered to include zero. Won specifically claims 20 parts by weight Cr, and 1 part by weight Si which falls within applicant's claimed ranges. Won teaches that the hardfacing material may be applied as a protective coating to a metal substrate. The substrate may include turbine engine blades (page 16). Further regarding the presence of rare earth metals, Won teaches that cerium may be present, however, Won also teaches an embodiment that does not include cerium (page 9, final full paragraph). Won does not teach the presence of aluminum therefore it is assumed to not be present.

Claims 19, 20, 22-27, 34-36 are rejected under 35 U.S.C. 102(b) as being anticipated by Buckland (US 2,920,007). Buckland teaches a turbine blade made of an alloy that is treated to form a protective surface layer. The surface area is a fine grained alloy while the underlying substrate is a coarse grained alloy, both having the same base alloy material. Buckland teaches that iron based alloys which are usable include N155 which has 20 wt% Cr, 0.4 wt% Si (col. 2, lines 35-55), and no aluminum or rare earth metals, with the balance iron. Other alloys are also discussed which include aluminum in very low amounts. As the protective layer is formed from the substrate material, it will have the same overall composition. Regarding claims 23-27, the substrate is ferritic, the protective layer is bonded to the substrate and is considered adhesive thereto, and no diffusion treatment appears to be present. Further, since the compositions are the same, the CTE would be expected to be the same as well. Regarding claims 34-36, the substrate as stated above is metallic (iron alloy) and the article is a turbine blade.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Buckland (US 2,920,007). Buckland teaches the turbine blade having a protective coating formed thereon as discussed above and teaches that the coating may be from a few mils to 22 mils thick (col. 2, lines 15-20) which overlaps with the claimed range of 100 to 300 microns. It would have been obvious to

one of ordinary skill in the art at the time of the invention to have selected the overlapping portion of the ranges disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, *In re Malagari*, 182 USPQ 549. Furthermore, it would have been obvious to adjust the thickness of the protective layer to provide the maximum protection to the underlying substrate thereby reducing cost of repair and replacement.

Claims 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Buckland (US 2,920,007) in view of Czech (US 5,939,204). Buckland teaches the turbine blade as discussed above but does not teach a ceramic overcoat. Czech teaches a turbine engine component having a superalloy substrate, a metallic protective coating, and a further protective coating which is a gas permeable ceramic layer. This ceramic layer is made of zirconia and is particularly provided as a thermal barrier layer for a gas turbine structure part such as a blade (Czech col. 5, lines 55-67; blade-col. 6, lines 33-36). It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the zirconia ceramic layer taught by Czech to the turbine blade of Buckland as Czech clearly teaches that it is known in the art to form a thermal barrier layer over a metallic turbine component for additional protection thereof.

Regarding claim 31, Buckland teaches the turbine blade having a protective coating formed thereon as discussed above and teaches that the coating may be from a few mils to 22 mils thick (col. 2, lines 15-20) which overlaps with the claimed range of 100 to 300 microns. It would have been obvious to one of ordinary skill in the art at the time of the invention to have selected the overlapping portion of the ranges disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, *In re Malagari*, 182 USPQ 549. Furthermore, it would have been obvious to adjust the thickness of the protective layer to provide the maximum protection to the underlying substrate thereby reducing cost of repair and replacement.

Regarding claim 33, as the material of Buckland overlaps with the composition of the material claimed, and is taught for use in a turbine engine which is exposed to high temperatures; it is expected to be suitable for exposure to temperatures of up to 950 degrees Celsius.

Claims 19-29 and 31-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Minato et al (US 3,902,823) in view of Buckland (US 2,920,007). Minato teaches a turbine blades comprising an alloy steel with the composition of 11-13.5 wt% chromium, preferably 11.5-12.5wt% Cr, up to 1wt% silicon, and up to 0.2 wt% aluminum, and the balance iron. Minato does not teach a protective layer formed on the metallic substrate. Buckland teaches a turbine blade comprising an iron base alloy similar to that of Minato and further teaches the formation of a fine grained surface layer thereon by treatment of the substrate material. Buckland teaches that the formation of this fine grain layers in a turbine component neutralizes stress concentrations and reduces stresses from small mechanical imperfections resulting from foreign particles passing through the turbine during use (col. 4, lines 24-50). As Buckland teaches that formation of a protective layer of a fine-grain surface resulting from treatment of the underlying substrate reduces or neutralizes stress in the turbine blade, it would have been obvious to one of ordinary skill in the art at the time of the invention to treat the substrate of Minato in a similar manner to form a protective layer over the blade structure. This would result in the formation of a protective layer having the same composition as the underlying substrate which falls within the instantly claimed ranges.

Regarding claims 28 and 29, the substrate of Minato comprises 11.5-12.5 wt% Cr alloy steel.

Regarding the thickness of the layer, Buckland teaches the turbine blade having a protective coating formed thereon as discussed above and teaches that the coating may be from a few mils to 22 mils thick (col. 2, lines 15-20) which overlaps with the claimed range of 100 to 300 microns. It would have been obvious to one of ordinary skill in the art at the time of the invention to have selected

the overlapping portion of the ranges disclosed by the reference because overlapping ranges have been held to be a prima facie case of obviousness, *In re Malagari*, 182 USPQ 549. Furthermore, it would have been obvious to adjust the thickness of the protective layer to provide the maximum protection to the underlying substrate thereby reducing cost of repair and replacement.

Claim 30 is rejected under 35 U.S.C. 103(a) as being unpatentable over Minato et al (US 3,902,823) in view of Buckland (US 2,920,007 and further in view of Czech (US 5,939,204). Minato and Buckland are silent regarding a ceramic overlayer for the turbine blades. Czech teaches a turbine engine component having a superalloy substrate, a metallic protective coating, and a further protective coating which is a gas permeable ceramic layer. This ceramic layer is made of zirconia and is particularly provided as a thermal barrier layer for a gas turbine structure part such as a blade (Czech col. 5, lines 55-67; blade-col. 6, lines 33-36). It would have been obvious to one of ordinary skill in the art at the time of the invention to apply the zirconia ceramic layer taught by Czech to the turbine blade of Buckland as Czech clearly teaches that it is known in the art to form a thermal barrier layer over a metallic turbine component for additional protection thereof.

Response to Arguments

Applicant's amendments and arguments have overcome the previous rejections of record.

Applicant's arguments with respect to claims 19-38 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jennifer McNeil whose telephone number is (571)272-1540. The examiner can normally be reached on Monday through Thursdays from 9:00 am to 5:30 pm.

The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jennifer McNeil/

Supervisory Patent Examiner, Art Unit 1794